R. Kamm 6-25-83

Proposed design for FTC holder

Design rationale. This design is intended to provide a more realistic simulation of the filter-lip mucosal relationship found during normal smoking. It is not our objective to merely match ventilation figures obtained with a PPA or similarly artificial device, but rather to reproduce those conditions which may impair ventilation in the real smoker. In this regard, the following factors need to be considered and properly mimicked in the test apparatus:

1) Pressures exerted on the cigarette filter
2) Total area of filter surface exposed to lip pressure
3) Depth of insertion, i.e. the location of the region of lip contact with respect both to the vent holes and filter end.

These are considered by us (B&W) to be the major factors influencing the possible obstruction of ventilation flow and, if properly accounted for, will produce ~~measured values for a smoking yield~~ values of ventilation consistent with normal smoking.

The first two factors provide for a realistic simulation of possible groove collapse anywhere along the length of

the ventilation channels while the last pertains to the possible occlusion of vent grooves due to "lip dicge" at the mouth end of the filter.

Proposed design. The design shown in the figure retains the simplicity of previous holders but incorporates the important design considerations mentioned above. The holder consists of a rigid cylinder onto which is mounted a specially fabricated silicone rubber tube (see figure). To this extent, our proposed design ~~con~~ resembles both the Borgwaldt and Filtrona holders. The tube used in our design, however, has a very thin wall (dimension yet to be determined) and a diameter (when unstretched) which closely matches that of a cigarette (~8 mm). This tube is mounted onto the rigid holder ~~so that when~~ in a totally relaxed state so that there is no initial stretch. (in combination with the thin-wa Mounting the tube in this way, ensures that the pressure acting on the filter will be equal to that supplied to the air chamber within the holder. During the FTC test to measure yields of nicotine and tar this pressure should be maintained at a level typical of normal smoking; in the range of 30 to 100 torr (see earlier report of R. Kumm ... date ...).

While similar in some respects, the this design differs from both the Borgwaldt and Filtrona holders in that the pressure applied to the filter and the relationship of contact between the filter and lip can be directly determined and set to values deemed appropriate for the simulation of normal smoking.

The dimensions indicated in the figure pertain to the following measureable smoking parameters:

A = total width of lip $\stackrel{?}{\cong}$ 12 mm

B = normal insertion depth $\cong$ 9 mm

where the dimensions given reflect our current best estimates. These ~~figures~~ values should, however, be determined in a carefully controlled study.

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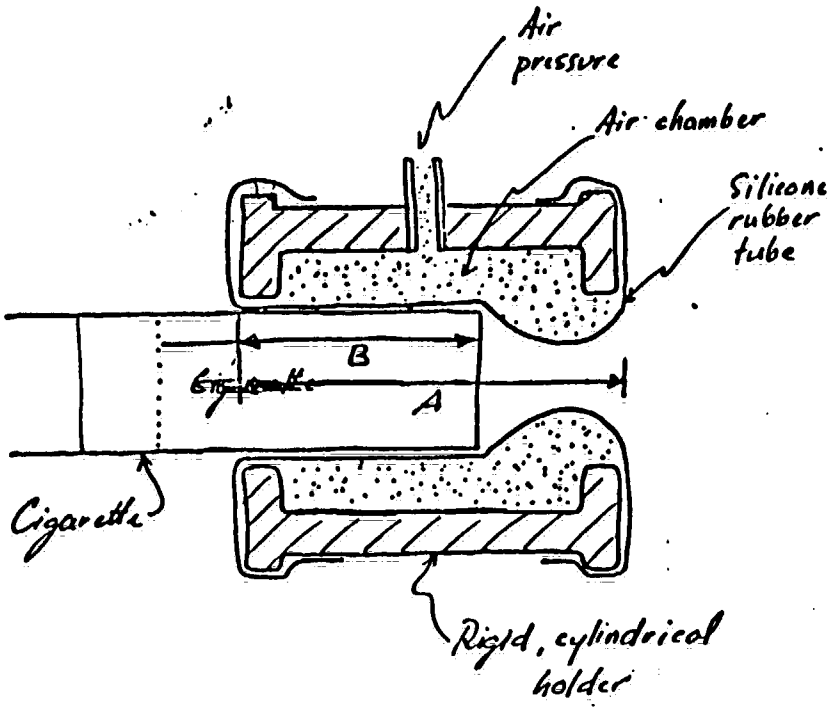
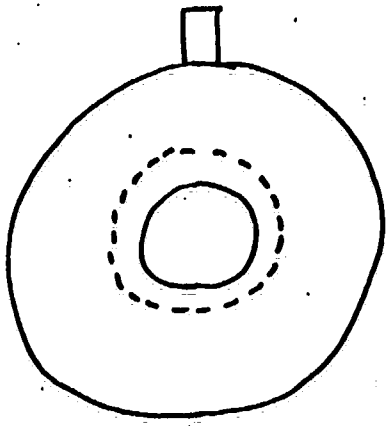
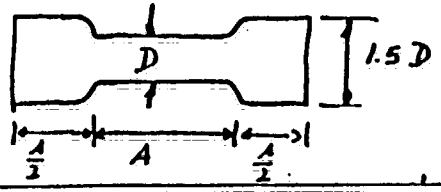


X-Sectional View



End view

Silicone rubber tube



; D = cigarette diameter